Sunsetting Warp: A Farewell to the Solidity to Cairo transpiler

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By the Warp team.

With recent developments in the Starknet ecosystem, Nethermind has decided to sunset one of its major projects: Warp — the Solidity to Cairo transpiler.

Celebrating the Achievements of Warp

Before we delve into the reasons and implications of this decision, let's first take a moment to appreciate the invaluable contributions of Warp:

1. Demonstrating the Completeness of Starknet:

[The successful compilation of Uniswap

](https://twitter.com/NethermindEth/status/1580652273897656321?s=20), a landmark achievement in the Warp project, significantly contributed to showcasing the completeness of Starknet. This accomplishment garnered immense media coverage signaling that Starknet had reached 'EVM equivalence' and was ready for complex deployments. Below, you can find a selection of articles reporting the feat:

- Cointelegraph
- The Coin Republic
- Etherworld
- The Block
- Crypto Times
- Digital Market News
- Uniswap Forum
- Attracting Solidity Developers:

Warp proved to be invaluable in demonstrating to Solidity developers that Starknet was ready for use. Several projects opted for Warp as their entry point into the ecosystem.

1. Simplifying Complexities:

The Warp project played a crucial role in abstracting the complexities of Cairo 0, making it more accessible and user-friendly for developers.

We're proud that the Warp project successfully achieved these objectives for Cairo 0, marking it a significant milestone in Nethermind's journey.

Reasons for Closure: Why We Are Sunsetting Warp

As Nethermind and the ecosystem evolve and grow, we must make strategic decisions to stay at the forefront of blockchain innovation. As a fast-growing ecosystem, Starknet looks vastly different today from the time when Warp was initiated two years ago.

Recent developments and the introduction of Cairo 1.0 have been particularly impressive and have substantially reduced

the necessity for Warp. The reasons behind our decision to sunset the Warp project include the following:

- The Emergence of Cairo 1.0:

Cairo 1.0 is proving to be an outstanding tool that has gained substantial developer support. Its potential may even surpass that of Solidity.

- Infeasibility of Audits or Formal Verification:

With Warp's Cairo 1.0 branch amassing a whopping 36k lines, auditing or formally verifying the codebase is infeasible. We think it's irresponsible to advocate projects to test Warp on mainnet without any other assurances.

- Brittleness of Compiler Output Audits:

The project considered advocating for audits of the compiler output. However, small changes in the compiler can lead to the audit of the compiler output needing to be updated.

- Diverging Security Risks:

Some have argued that using Warp should mirror the use Solc in the early days of Ethereum, with application developers accepting the risks of experimental software and acting accordingly. However, there is a fundamental difference: unlike Solc for Ethereum, any issue with Warp does not spell failure of the entire Starknet ecosystem, leading to a vastly different risk profile. Moreover, blockchains have matured significantly since then, and the expectations around the security of their implementations have increased considerably.

- Maintenance Challenges:

Generally, compiled output is cumbersome to maintain. Given the size of Solidity projects today, it is likely that projects would rewrite their code in Cairo 1.0 instead.

- Resource Intensity of Cairo 1.0 Support in Warp:

Adding support for Cairo 1.0 in Warp is a complex and costly process that would divert resources from other vital areas.

- Starknet's Compute Capabilities:

As we anticipate more projects making use of Starknet's increased compute, we firmly believe that Cairo 1.0 offers a more efficient means of scaling your programs on the Cairo OS. It offers a better experience for writing projects with significantly higher line counts than before.

- Differences between the EVM and Starknet:

A few differences between the EVM and Starknet proved challenging to overcome in the compiled context. As a result, Solidity codebases still needed to be modified to be successfully compiled to Cairo. These changes were enough to prevent some adoption of the tool.

- Similar tools:

Kakarot, on top of Madara, stands a good chance of making type-1 EVM chains based on Starknet a reality. We love these projects and hope to see them gain adoption. Kakarot is not a compiler; it interprets the EVM opcodes on Starknet, relying on the cheap compute of Starknet.

A thank you to everyone involved

As we reflect on the journey of Warp, we recognize and appreciate all the people whose hard work, dedication, and innovation have contributed to the project's many accomplishments.

The Core Team:

Their hard work and expertise were instrumental in bringing Warp to life and shaping its direction. Each team member played a significant role in the project, and their tireless efforts have not gone unnoticed:

- Alejandro Labourdette
- Artem Yurchenko
- Atharva Nimbalkar
- Carmen Cabrera
- Dom Henderson

- Greg Vardy
- Guy McComb
- Jorik Schellekens
- Luis Lara
- Piotr Piwoński
- Rodrigo Pino
- Rohit Ranjan
- Swapnil Raj

StarkWare:

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- Uri Kolodny and Eli Ben-Sasson for their guidance and support
- Lior Goldberg and Shahar Papini for their technical guidance
- Alex Manuskin and Ohad Barta for project management and support

Interns and Contributors:

Our interns' and external contributors' fresh ideas and insights have greatly enriched the project. We want to express our gratitude to the following individuals for their contributions:

- Purva Chaudhari
- Ahmet Yazıcı
- Shivam Rajput
- Mitesh Pandey
- Franco Barpp Gomes
- Esdras Santos
- tserg
- Ankit Choudhary

Thank you all for your amazing work, passion, and commitment.

A whole host of people have contributed to the project in various ways. We appreciate all the inputs from our users, the advice and support from the people at Nethermind, and the work by our marketing, design and other teams.

Our Path Forward

With every ending comes a new beginning, and we are confident that the closure of Warp is a step in the right direction. Our next steps include the following:

- Transparent Communication:

We will announce this decision across all our channels and directly communicate with all parties that depend on Warp. If you depended on Cairo 1.0 Warp support for your upcoming project and we were unaware of your plans, please get in touch with us.

- Completion of Current Features:

To ensure we leave the Warp project clean, we will wrap up all features currently under development.

- Supporting Community-Led Initiatives:

While stepping back from Warp, we welcome and support any community-driven efforts to carry the project forward.

- Exploring Future Projects:

We will be replacing Warp with other exciting efforts in the Starknet space. Keep an eye on Nethermind.

We want to express our sincere gratitude to all our community members and partners for your unwavering support and contributions to the Warp project.

Farewell Warp. Let’s keep building.

About Us

Nethermind is a team of world-class builders and researchers. We empower enterprises and developers worldwide to access and build upon the decentralized web. Our work touches every part of the web3 ecosystem, from our Nethermind node to fundamental cryptography research and infrastructure for the Starknet ecosystem.

If you’re interested in solving some of blockchain’s most difficult problems, visit our

[job board

](https://nethermind.page.link/careers)!